UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,522	01/23/2004	Tadahiro Ohmi	040258-0307826	5344

909 7590 12/27/2005

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER	
BOOTH, RICHARD A	

ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/762,522	Applicant(s) OHMI ET AL.	
	Examiner Richard A. Booth	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2005*.
2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-11,14 and 20* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☒ Claim(s) *5 and 20* is/are allowed.
6)☒ Claim(s) *6-11 and 14* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holler et al., U.S. Patent 5,268,320 in view of Saito et al., "High-Integrity Silicon Oxide Grown at Low-Temperature by Atomic Oxygen Generated in High-Density Krypton Plasma".

Holler et al. shows the invention substantially as claimed including a method of fabricating a flash memory device, said flash memory device comprising a silicon substrate 28; a first electrode 25 formed on said silicon substrate with an insulation film 30 disposed therebetween; and a second electrode 23 formed on said first electrode with an inter-electrode film (26,27,29) interposed therebetween, said inter-electrode insulation film having a stacked structure including a first silicon oxide film 29, a first silicon nitride film 27, and a second silicon oxide film 26 (see figs. 2-3 and col. 5-lines 5-55).

Holler et al. fails to expressly disclose forming the silicon oxide films by supplying a gas containing oxygen and a gas predominantly of Kr into a processing chamber, and exciting plasma in said processing chamber by a microwave.

Saito et al. discloses forming a silicon oxide film by supplying a gas containing oxygen and a gas predominantly of Kr into a processing chamber, and exciting plasma in said processing chamber by a microwave (see introduction). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Holler et al. so as to form the oxide layers using the process taught by Saito et al. because such a process allows a high growth rate at a low temperature.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al., U.S. Patent 5,304,829 in view of Saito et al., "High-Integrity Silicon Oxide Grown at Low-Temperature by Atomic Oxygen Generated in High-Density Krypton Plasma".

Mori et al. shows the invention substantially as claimed including a method of fabricating a flash memory device, said flash memory device comprising a silicon substrate10; a first electrode 13 formed on said silicon substrate with an insulation film 12 disposed therebetween; and a second electrode 18 formed on said first electrode with an inter-electrode film (14,15,16,17) interposed therebetween, said inter-electrode insulation film having a stacked structure including a first silicon nitride film 14, a first silicon oxide film 15, a first silicon nitride film 16, and a second silicon oxide film 17 (see figs.2a-2e and col. 6-line 10 to col. 7-line 33).

Mori et al. fails to expressly disclose forming the silicon oxide films by supplying a gas containing oxygen and a gas predominantly of Kr into a processing chamber, and exciting plasma in said processing chamber by a microwave.

Saito et al. discloses forming a silicon oxide film by supplying a gas containing oxygen and a gas predominantly of Kr into a processing chamber, and exciting plasma in said processing chamber by a microwave (see introduction). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Mori et al. so as to form the oxide layers using the process taught by Saito et al. because such a process allows a high growth rate at a low temperature.

Allowable Subject Matter

Claims 5 and 20 are allowed.

Conclusion

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 10/5/05 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

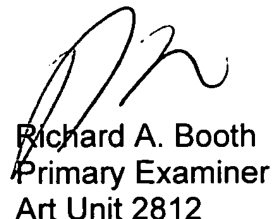
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A. Booth whose telephone number is (571) 272-1668. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard A. Booth
Primary Examiner
Art Unit 2812

December 23, 2005